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Neurofeedback training to improve neuronal regulation in ADD: A case report

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Abstract

This report details the use of Neurofeedback training (NFT) on a 15 years old girl with Attention Deficit Disorder. The child's mother reported a history of hyperactivity, inability to self-regulate/focus attention, impulsivity, self injury and behaviorally disinhibition. The goal was to enable the child to achieve a better brain regulation, leading to improvements in attention, mood, and social behavior. The sensors were placed on the scalp and connected to the computer software that detects specific neuronal activity. The subject showed an improvement in emotional reaction, a reduction in self injuries and oppositional behavior, and a better social relationship.

Keywords: Neurofeedback; EEG training; cognitive psycology; neuroscience; ADD/ADHD

1. Introduction

Neurofeedback training (NFT) is a direct training of the efficient functioning of the brain. It is a technique that gives user actual or real-time feedback of the brain performance. The activity is measured by sensors on the scalp and visual displays. Dysregulation is the problem that is dealt with NFT. The purpose of NFT in this case study is to train an individual's brain and enable the individual, who in this case is a 15 year-old girl, to achieve better brain regulation leading to improvements in attention, mood, and social behavior. NFT was conducted in 25 sessions over a three-month period on the teenage girl, who was diagnosed as having attention deficit disorders (ADD). ADD and attention deficit hyperactivity disorder (ADHD) are characterized by the inability to self-regulate/focus attention, distractibility, hyperactivity and impulsive behavior. The basis of this neurological disorder may be decreased arousal and is associated with decreased noradrenergic activity (Zametkin et al.,1990), increased slow 4 -8 hz, theta activity in frontal and central cortical regions (Mann, Lubar, Zimmerman, Miller, & Muenchen, 1992) and decreased glucose metabolism in both frontal cortical and certain subcortical regions (Zametkin et al., 1990). This biologically-based behavioral disability has a pervasive negative impact on a wide range of adaptive functioning and most

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